

NOAA XBT and UCTD Observations in Support of SPURS

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and others



**NASA SPURS Meeting
Miami, January 16-18, 203**

Enhanced Observations

(from SPURS 2012 meeting)

- Goal: Add to sustained observing system within a prescribed SPURS region
- Location* is a $15^{\circ} \times 15^{\circ}$ box centered from $15\text{-}30^{\circ}\text{N}$ and from $30\text{-}45^{\circ}\text{W}$
- Period: June 2012 – Sept 2013
- Sustained: **Drifters, Argo Floats, TSG, XBT**
- Opportunity: **Mooring enhancement (20°N , 38°W), Underway CTD**

Enhanced goals from SPURS 2012 Meeting

XBTs*:

- Reestablish
 - AX20 (France-Cayenne) – 3xYr (2012) + 4xYr(2013) **Partly Accomplished**
 - USA Equipment, France logistics **Accomplished**
- Enhance quarterly lines
 - AX07 (Gibraltar-Miami) Adding one additional transect in both 2012 and 2013. **Accomplished**
 - AX08 (CT to NY) Adding one additional transect in both 2012 and 2013. **Accomplished**

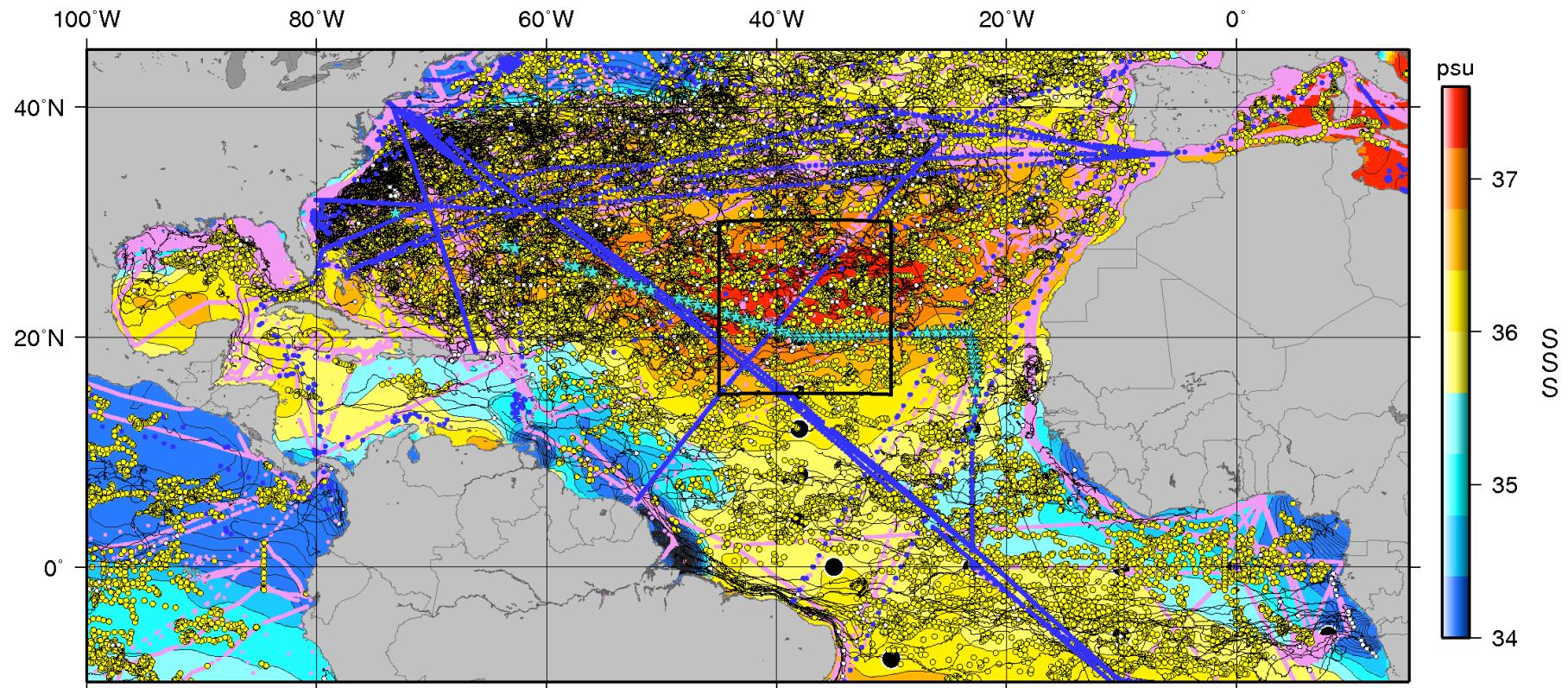
* Funded by NOAA/CPO and NOAA/AOML

Enhanced goals from SPURS 2012 Meeting

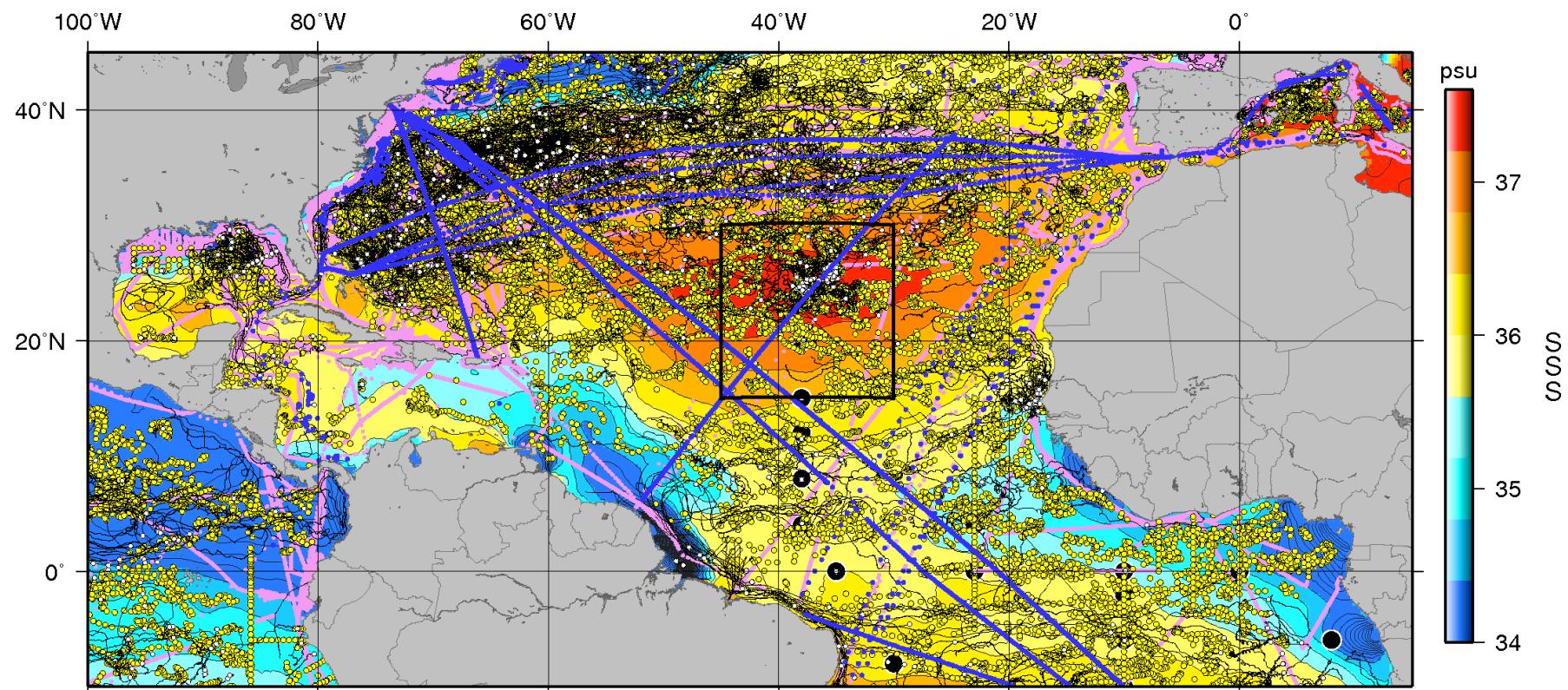
- **TSG*** - to maintain TSG on Gibraltar-Miami (AX07) through 2013 (2 ships gives 25 transect per year). **Partly Accomplished, Barcelona Express (with XBT, pCO2) and M/V Explorer**
- **Underway CTD* (Ron Brown)**
 - Pirata cruise in Sept (2012-13) **Underway**
 - Endeavor cruise 2013 may be able to borrow NOAA AOML underway CTD (TBC) **To be Planned**

* Funded by NOAA/CPO and NOAA/AOML

Enhanced Sustained Ocean Observations - 2011



Enhanced sustained Ocean Observations - 2012



Enhancement of Sustained Ocean Observations

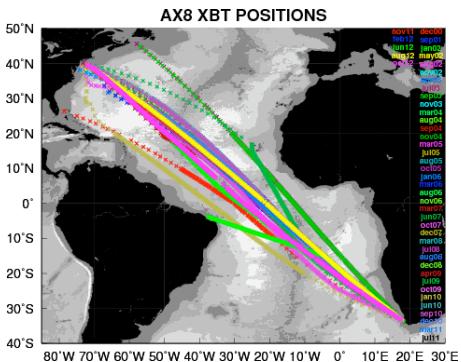
| | 2009 | 2010 | 2011 | 2012 | 2013 |
|----------------------------|------|------|------|------|------|
| XBTs | 120 | 110 | 149 | 150 | |
| Drifters deployed* | 3 | 7 | 18 | 40 | |
| Drifter through region* | 62 | 60 | 61 | 95 | |
| Floats deployed* | 3 | 10 | 8 | 24 | |
| Float observations* | 50 | 59 | 60 | 77 | |
| AOML UCTD | - | - | 70 | 0* | ~100 |
| AOML CTD | - | - | 30 | 0* | 30 |

* PNE Cruise currently underway

XBT transects

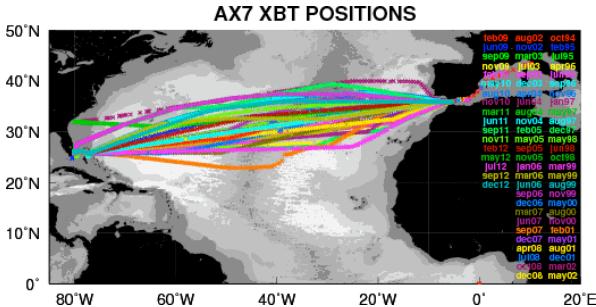
- High Density Mode, ~25km distance between deployments
- Data at: <http://www.aoml.noaa.gov/phod/hdenxbt>

AX08



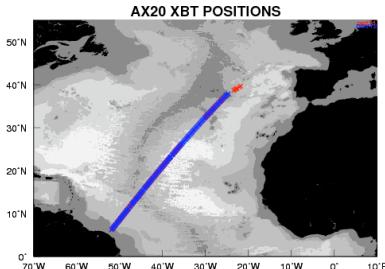
Before 2011: 2.5 transects ~600 XBTs
2011: 3 transects ~1200 XBTs
2012: 5 transects ~2400 XBTs

AX07



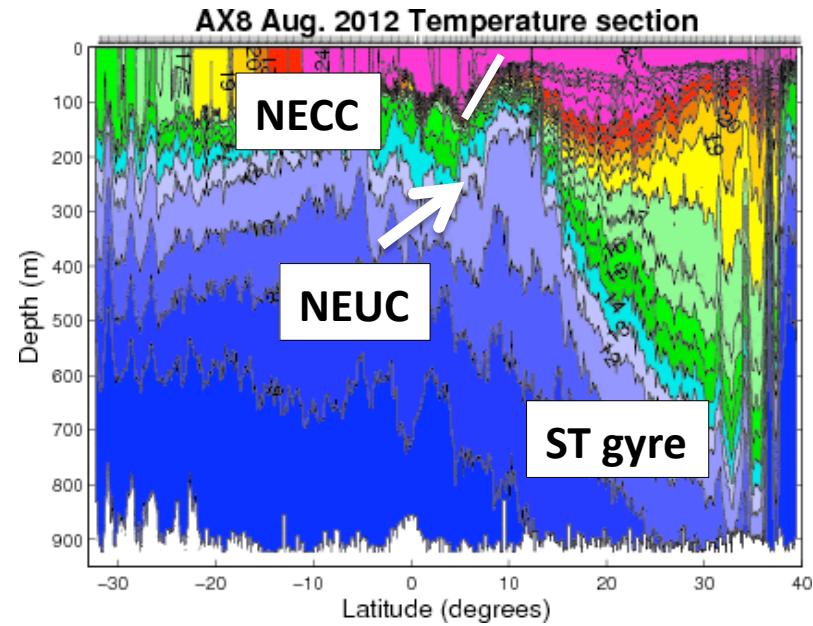
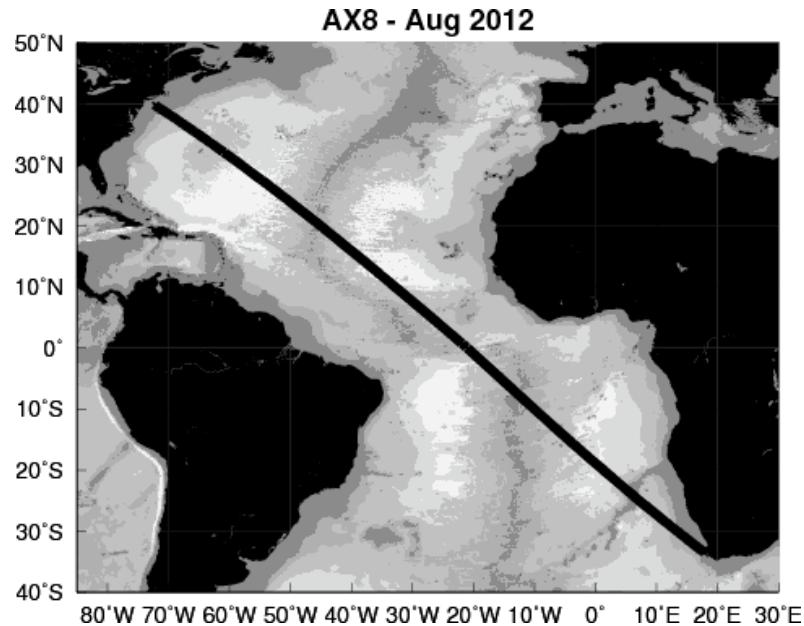
Before 2011: 4 transects 1100 XBTs
2011: 4 transects ~1200 XBTs
2012: 5 transects ~1500 XBTs

AX20



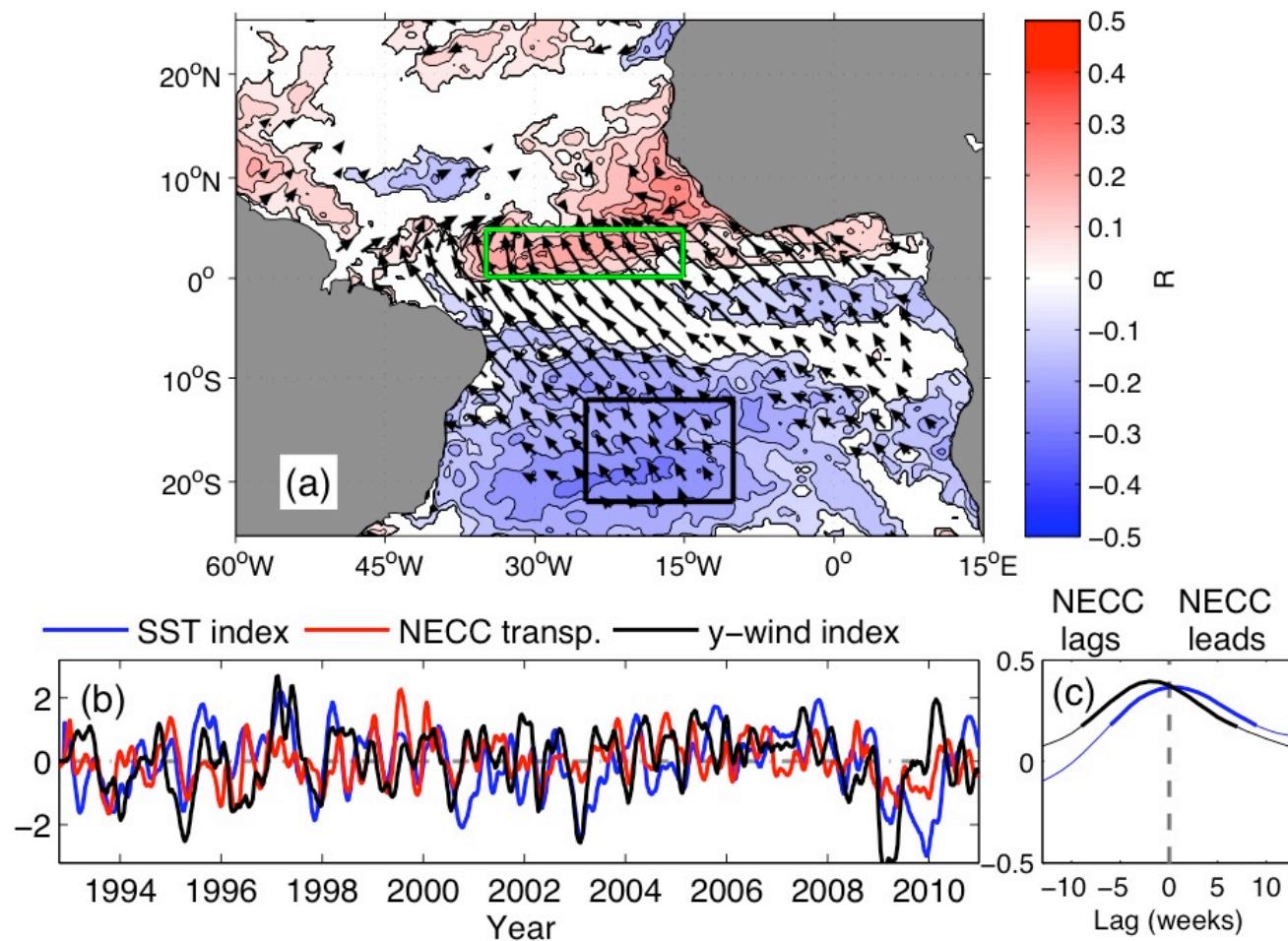
Before 2011: not implemented
2011: 1 transect ~300 XBTs
2012: 1 transect ~320 XBTs

XBT transect AX08



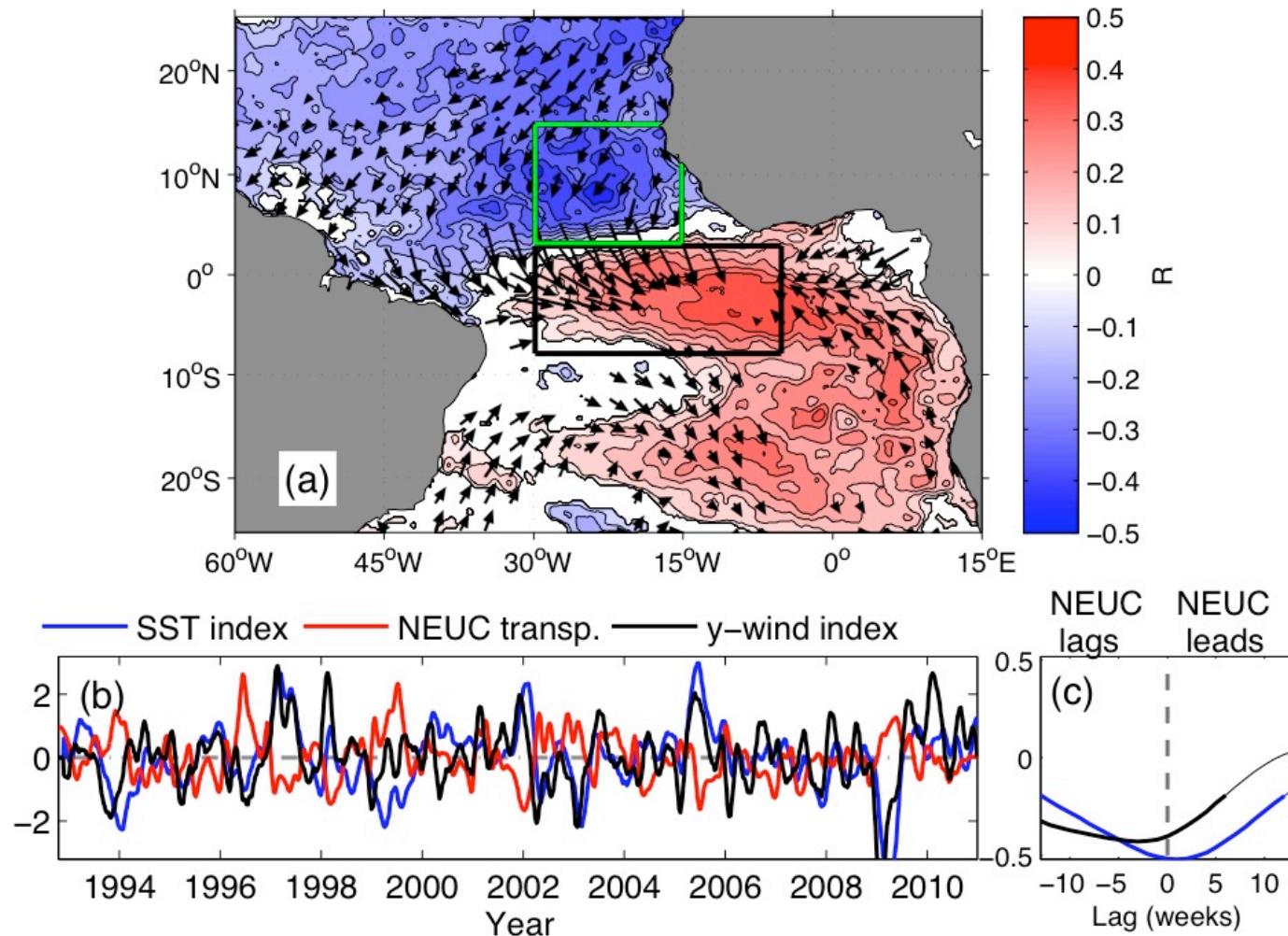
XBT transect AX08

NECC and SSTs



XBT transect AX08

NEUC and SSTs

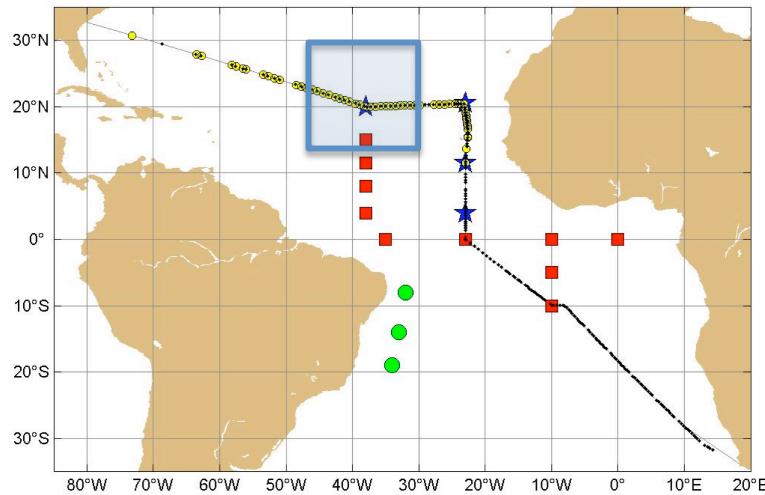


* Studies will be extended to cover SPURS regions

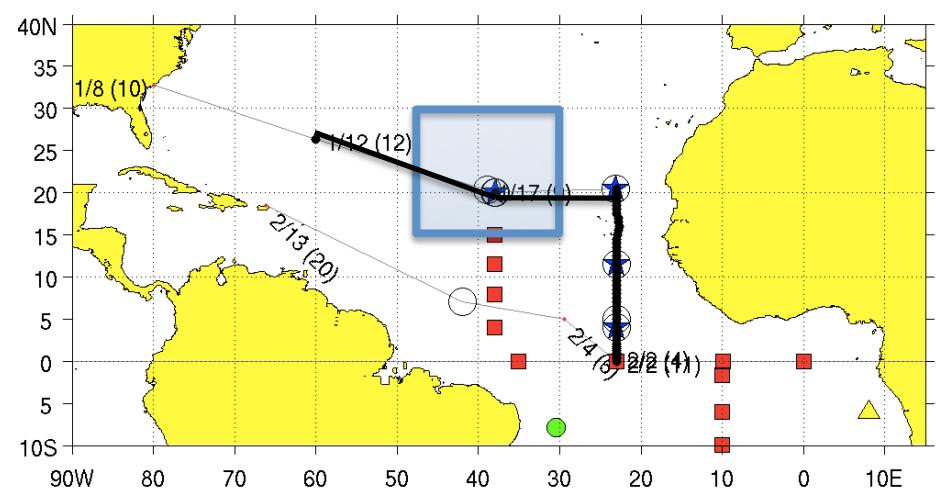
Goes et al, 2013 (JGR, submitted)

Underway CTD (UCTD)

AOML PNE Cruise 2011 (75 profiles)



AOML PNE Cruise 2013 (~100 profiles)



Ship speed = 13knts

Max depth observations = 200-400m

Spacing between observations = 0.5 deg along cruise track

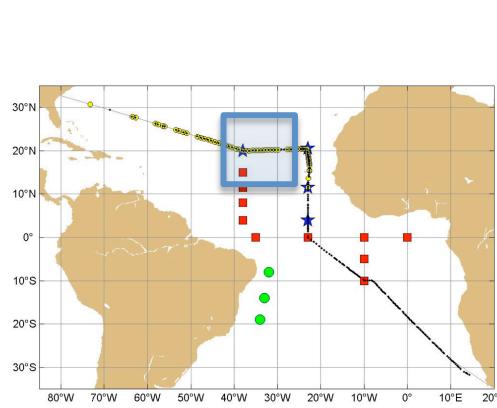
Downcast values used as upcast values were noisy

Std Dev UCTD/CTD obs = 0.02C and 0.01C offset

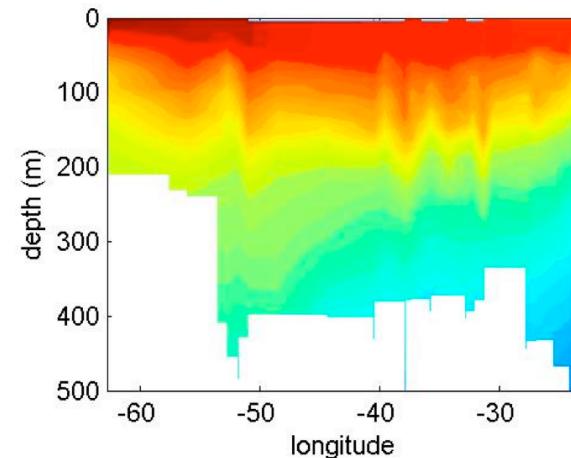
70 casts during PNE2011 and ~100 casts during PNE2012/3 (currently underway)

Underway CTD (UCTD) PNE 2011

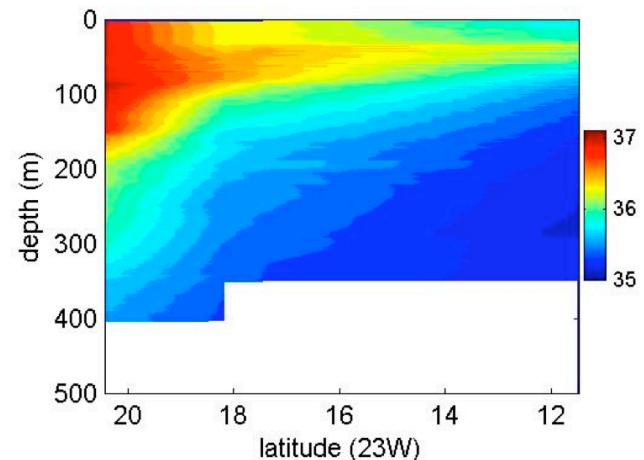
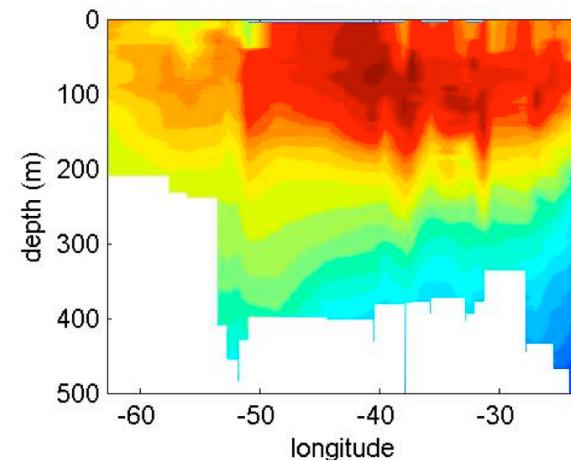
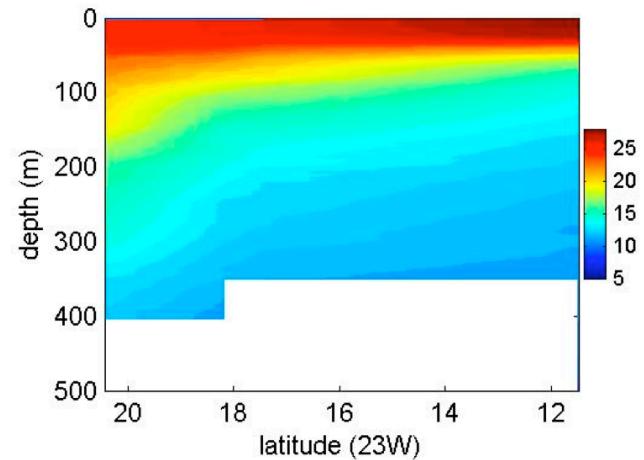
Temperature and salinity sections



Zonal transect



Meridional transect



Plans 2013

XBTs:

**continue enhanced deployments in AX08 and AX10
continue collaboration/deployments in AX20 (Germany?)**

TSGs:

2 ships with TSGs in AX07 transect, ~ 25 transects per year

PIRATA-related:

**Servicing moorings
CTD casts (~30)
Underway CTDs (~100)**

Seek funding from NOAA/CPO Climate Observations Division to maintain these additional observations